Comparison of the one-year recurrence rate of direct inguinal hernia repaired with lichtenstein procedure under general versus spinal anesthesia

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Abstract

Background and aims: Inguinal hernia is a condition that needs to be repaired through surgery in most of the cases. The recurrence of this condition is a problematic issue that highlights the importance of the identification of the factors preventing form the incidence of this condition. Regarding this, the present study was conducted to determine and compare the one-year recurrence rate of direct inguinal hernia operated with Lichtenstein method under general versus spinal anesthesia in Rasoul Akram Hospital, Tehran, Iran, during 2015-2016. **Materials and Methods:** This observational cohort study was conducted on 80 consecutive patients with direct inguinal hernia operated with Lichtenstein method in Rasoul Akram Hospital in 2015-2016. The patients undergoing inguinal hernia surgery under general and spinal anesthesia were compared in terms of the one-year recurrence rate of this medical condition. **Results:** According to the results, the recurrence rate of 5% was obtained for each of the two groups. There was no significant difference between the two groups regarding the recurrence rate (P>0.05). In addition, no related factor for inguinal hernia recurrence was observed in the study groups (P>0.05). **Conclusion:** Based on the findings, it can be concluded that the type of anesthesia (i.e., general versus spinal method) exerted no significant effect on the recurrence rate of direct inguinal hernia.

Keywords: Recurrence, Inguinal hernia, General anesthesia, Spinal anesthesia.

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Introduction

Hernia is a rupture in an apparatus due to a large defect of abdominal wall muscles leading to the passage of intra-abdominal organs to hernia sack (1). Indirect inguinal hernia is the most common type in both males and females. Hernia is more commonly occurs in the right side (2). Some predisposing factors for this medical condition include chronic cough, chronic obstructive pulmonary disease, chronic constipation, benign prostate hyperplasia, family history of hernia, collagen vascular diseases, previous incision in the right lower quadrant of the abdomen, smoking, heavy lifting, and physical activity (3, 4).

Inguinal hernia is seen in 16% of men and should be treated after diagnosis (5, 6). Nowadays, side effects hernia surgery is on a decreasing trend; moreover, the recurrence rate of this condition is lowered possibly due to the use of mesh and tension-free methods (8-10). The type of anesthesia may also be a matter of importance in patient undergoing inguinal hernia repair (11). Our private experience regarding the patients under study can be regarded as a justification for assuming a role for these methods in the outcomes. With this background in mind, the present study was performed to determine and compare the one-year recurrence rate of direct inguinal hernia operated with Lichtenstein method under general versus spinal anesthesia techniques.

Methods and materials

This observational prospective cohort study was conducted on 80 consecutive patients with the primary type of direct inguinal hernia operated with Lichtenstein method (with poly-propylene mesh) at Rasoul Akram Hospital, Teharn, Iran, in 2015-2016. The study population was assigned into two groups of general (n=40) and spinal (n=40) anesthesia. The two groups were compared in terms of the one-year recurrence rate of hernia. Prior to the study, informed consent was obtained from all patients. The current study was approved by the ethics committee with the ethical code of Ir.iums.rec.96.9211245011.

The inclusion criteria were direct inguinal hernia and possibility of follow-up. On the other hand, the exclusion criteria were: 1) indirect inguinal hernia or femoral hernia, 2) medical disorders, 3) impossibility of follow-up, and 4) use of local method for anesthesia.

Statistical analysis

Data analysis was performed in SPSS software, version 13.0 (Statistical Procedures for Social Sciences; Chicago, Illinois, USA) using Chi-square test, Fisher's exact test, and independent t- test. P-value less than 0.05 were considered statistically significant.

Results

According to the results, the mean ages of the participants in the spinal and general groups were 46.75±14.7 and 45.53±17.67 years, respectively (P>0.05). Furthermore, 92.5% and 85% of the patients in the spinal and general groups were male, respectively (P>0.05). Furthermore, the spinal and general groups had the mean body mass index of 26.5±2.8 and 26.2±2.7 kg/m², respectively (P>0.05).

Regarding the occupation, 12.5% and 15% of the patients in the spinal and general groups had high-risk jobs, respectively (P>0.05). In terms of the location of hernia, 57.5% and 65% of

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the patients in the spinal and general groups had right-sided hernia, respectively (P>0.05). As shown in Table 1, a recurrence rate of 5% was obtained for each of the two groups. Therefore, there was no significant difference between the two groups in terms of the hernia recurrence rate (P>0.05). All the recurrent cases were direct hernia types. In addition, no related factor for recurrence was obtained in the two study groups (P>0.05).

Table 1. Recurrence rate of direct inguinal hernia in general and spinal anesthesia groups

		Recurrence		
		Pos	Neg	Total
Anesthesia Type	Spinal	2 5.0%	38 95.0%	40 100.0%
	General	2 5.0%	38 95.0%	40 100.0%
Total		4 5.0%	76 95.0%	80 100.0%

Discussion & Conclusion

This study was performed to determine and compare the one-year recurrence rate of direct inguinal hernia operated with Lichtenstein method under general versus spinal anesthesia. The recurrence rate was obtained as 5% in each of the two groups. Regarding this, the two groups were not significantly different in terms of the inguinal hernia recurrence rate. Furthermore, no related factor for hernia recurrence was observed in the two groups.

This issue has been investigated in other countries many years ago. However, there is no study in Iran examining this domain. Therefore, there was no new reference available to cite in the present study. In a cohort study, Young et al. observed that spinal anesthesia resulted in more side effects than local and general methods (12). However, the mentioned study was just focused on the assessment of acute complications, and did not compare the recurrence rate. On the other hand, in the current study, the same recurrence rate was found for both types of anesthesia.

It is not probable to assess the safety differences between spinal and general methods in hernia repair since mortality and serious cardiovascular events are very low. However, general anesthesia is considered to have a significant effect on

psychomotor skills, attention, and memory in the post-anesthetic period.

Ozgun et al. (13) reported shorter hospital stay and analgesic use in 75 patients undergoing spinal anesthesia. They reported no recurrence in two methods revealing the similarity of these techniques, which is in line with our results. Shyam et al. (14) assessed 57 patients aged above 50 years subjected to hernia operation under one of the anesthetic methods

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of spinal, local, and general. They reported that all recurrent cases had general anesthesia. However, in our study, the recurrence rate was the same across the groups.

A potential problem of local anesthesia for inguinal hernia repair is toxicity, especially in obese patients, who require large amount of anesthetic drug. Shrestha et al. (15) reported that patients undergoing hernia repair under general and spinal anesthesia had no recurrence. In line with our findings, in the mentioned study, no significant difference was observed between the two groups in this regard. In another study, Fernandez-Ordonez et al. (16) compared patients subjected to hernia surgery under general and spinal anesthesia. They reported similar results across the groups with more cost benefits in the general method.

As the findings of the current study indicated, both groups (i.e., general vs. spinal anesthesia) had the same recurrence rate of direct inguinal hernia. However, it is required to perform further studies with a larger sample size, higher power, and multi-center sampling to control the confounding factors and obtain more accurate results.

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